

Math and Science Partnership (MSP)

Program Solicitation

NSF-02-061

DIRECTORATE FOR EDUCATION AND HUMAN RESOURCES

LETTER OF INTENT DUE DATE(S) (*optional*): March 15, 2002

FULL PROPOSAL DEADLINE(S) :

April 30, 2002 5:00 PM your local time, and October 15th annually thereafter



NATIONAL SCIENCE FOUNDATION



The National Science Foundation promotes and advances scientific progress in the United States by competitively awarding grants and cooperative agreements for research and education in the sciences, mathematics, and engineering.

To get the latest information about program deadlines, to download copies of NSF publications, and to access abstracts of awards, visit the NSF Web Site at:

<http://www.nsf.gov>

- **Location:** 4201 Wilson Blvd. Arlington, VA 22230
- **For General Information (NSF Information Center):** (703) 292-5111
- **TDD (for the hearing-impaired):** (703) 292-5090
- **To Order Publications or Forms:**
Send an e-mail to: pubs@nsf.gov
or telephone: (301) 947-2722
- **To Locate NSF Employees:** (703) 292-5111

SUMMARY OF PROGRAM REQUIREMENTS

GENERAL INFORMATION

Program Title: Math and Science Partnership (MSP)

Synopsis of Program: The Math and Science Partnership (MSP) enacts a portion of the President's vision, enunciated in No Child Left Behind, to strengthen and reform preK-12 education. The MSP builds on the nation's dedication to educational reform through support of partnerships that unite the efforts of local school districts with science, mathematics, engineering and education faculties of colleges and universities. The involvement of additional stakeholders, especially state, territorial and tribal government entities, is highly encouraged within the MSP. High expectations and achievement for all students, resulting in learning outcomes that can no longer be predicted based on race/ethnicity, socio-economic status, gender or disability, are important components of this new national effort to ensure that no child is left behind.

Cognizant Program Officer(s):

- Dr. Bernice T. Anderson, EHR, Research, Evaluation and Communication, telephone: 703-292-5151, e-mail: banderso@nsf.gov.
- Ms. Kathleen Bergin, EHR, Educational System Reform, telephone: 703-292-5171, e-mail: kbergin@nsf.gov.
- Dr. Jody Chase, EHR, Educational System Reform, telephone: 703-292-5173, e-mail: lchase@nsf.gov.
- Dr. Kathryn B. Chval, EHR, Elementary, Secondary and Informal Education, telephone: 703-292-5088, e-mail: kchval@nsf.gov.
- Mr. Lloyd E. Douglas, MPS, Mathematical Sciences, telephone: 703-292-4862, e-mail: ldouglas@nsf.gov.
- Dr. Janice Earle, EHR, Elementary, Secondary and Informal Education, telephone: 703-292-5097, e-mail: jearle@nsf.gov.
- Dr. Joyce B. Evans, EHR, Elementary, Secondary and Informal Education, telephone: 703-292-5098, e-mail: jevans@nsf.gov.
- Mr. Julio E. Lopez-Ferrao, EHR, Educational System Reform, telephone: 703-292-5183, e-mail: jlopezfe@nsf.gov.
- Ms. Celestine H. Pea, EHR, Educational System Reform, telephone: 703-292-5186, e-mail: cpea@nsf.gov.
- Ms. Mary F. Poats, ENG, Engineering Education and Centers, telephone: 703-292-5357, e-mail: mpoats@nsf.gov.
- Dr. Joan T. Prival, EHR, Undergraduate Education, telephone: 703-292-4635, e-mail: jprival@nsf.gov.
- Dr. Marilyn J. Suiter, EHR, Human Resource Development, telephone: 703-292-5121, e-mail: msuiter@nsf.gov.

Applicable Catalog of Federal Domestic Assistance (CFDA) Number(s):

- 47.076 --- Education and Human Resources

ELIGIBILITY INFORMATION

- **Organization Limit:** Proposals must be submitted on behalf of a partnership by a LEAD ORGANIZATION that is one of the following: 1) a preK-12 local, tribal, regional or state educational system, 2) an institution of higher education), 3) a higher education system or consortium, or 4) an educational consortium, private foundation, or other public or non-profit private school or organization focused on preK-12 education. The lead organization will be the prime awardee, assuming fiscal responsibility and the programmatic monitoring role for the overall award. Each PARTNERSHIP must include one or more institutions of higher education and one or more school district partners, and are encouraged to include other partners that bring needed human and institutional resources to the collaboration.
- **PI Eligibility Limit:** None
- **Limit on Number of Proposals:** A partnership may submit only one proposal per review competition.

AWARD INFORMATION

- **Anticipated Type of Award:** Comprehensive Awards will be Cooperative Agreements; Targeted Awards will be Standard or Continuing Grants
- **Estimated Number of Awards:** 25-30 Comprehensive Awards and approximately 60 Targeted Awards
- **Anticipated Funding Amount:** \$160 million

PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

- **Letters of Intent:** Submission of Letters of Intent is optional. Please see the full program announcement/solicitation for further information.
- **Full Proposals:** Deviations From Standard Preparation Guidelines
 - The program announcement/solicitation contains deviations from the standard Grant Proposal Guide (GPG) proposal preparation guidelines. Please see the full program announcement/solicitation for further information.

B. Budgetary Information

- **Cost Sharing Requirements:** Cost Sharing is not required.
- **Indirect Cost (F&A) Limitations:** Not Applicable.
- **Other Budgetary Limitations:** Other budgetary limitations apply. Please see the full program announcement/solicitation for further information.

C. Deadline/Target Dates

- **Letters of Intent (*optional*):** March 15, 2002
- **Preliminary Proposals (*optional*):** None
- **Full Proposal Deadline Date(s):**

April 30, 2002 5:00 PM your local time, and October 15th annually thereafter

D. FastLane Requirements

- **FastLane Submission:** Required
- **FastLane Contact(s):**
 - Ms. Rosalind D. Douglas, Education and Human Resources, Educational System Reform, telephone: 703-292-7880, e-mail: rdouglas@nsf.gov.
 - Ms. Grisela P. Moranda, Education and Human Resources, Educational System Reform, telephone: 703-292-5330, e-mail: gmoranda@nsf.gov.

PROPOSAL REVIEW INFORMATION

- **Merit Review Criteria:** National Science Board approved criteria. Additional merit review considerations apply. Please see the full program announcement/solicitation for further information.

AWARD ADMINISTRATION INFORMATION

- **Award Conditions:** Standard NSF award conditions apply.
- **Reporting Requirements:** Standard NSF reporting requirements apply.

I. INTRODUCTION

The future of the Nation depends on a strong, competitive science and engineering workforce and a citizenry equipped to function in a complex world (National Science Board, 1999). To achieve this, educational excellence in mathematics and science at all levels must be a major goal, not just to promote the health of science and engineering, but also to enhance every American's life opportunities through productive employment, active citizenship, and continuous learning. In pursuit of this goal, a core need is for all students - particularly those who have not traditionally participated in the fields of science, technology, engineering and mathematics (STEM) - to have the opportunity to learn the knowledge and skills that flow from teaching and learning based on high expectations linked to world-class standards. The future well-being of our country depends not only on how well we educate our children generally, but on how well we educate them in mathematics and science specifically.

Pre-college mathematics and science education is a local, state, and national concern. The prevailing achievement gap between majority and minority and/or disadvantaged students demands immediate action. As declared by the National Commission on Mathematics and Science Teaching for the 21st Century in *Before It's Too Late: A Report to the Nation* (2000), America's students must raise their performance in mathematics and science if they are to succeed in today's world and if the United States is to stay competitive in an integrated global economy. Moreover, improving mathematics and science education is also seen as a national security issue (United States Commission on National Security/21st Century). In response to the national situation, President Bush stated an educational vision in *No Child Left Behind* (2001) and indicated that among the underlying causes for the poor performance of U.S. students in the areas of mathematics and science, three problems must be addressed - too many teachers teaching out-of-field; too few students taking advanced coursework; and too few schools offering a challenging curriculum and textbooks. The President's reform agenda also recommends that partnerships among educational entities, especially bringing together the preK-12 community with scientists, mathematicians, and engineers from institutions of higher education, should address these issues and improve preK-12 teaching and learning in mathematics and science for all children.

Research clearly demonstrates that to deliver a competitive scientific and technical workforce, it is imperative to develop national strategies to improve the preK-12 instructional workforce (National Research Council, 2001). Indeed, because of the close relationship between student achievement and teacher knowledge and teaching skills, fundamental questions have been raised about the recruitment and training of new teachers, as well as the professional development that teachers undergo throughout their careers. For instance, it has been found that improving teacher preparation in post-secondary institutions is central to sustaining and deepening quality education for all students (National Commission on Teaching and America's Future, 1996). At the same time, many states are encouraging alternative routes to entering the teacher profession that still require future teachers to spend significant time in higher education, both at the baccalaureate and master degree levels. Ultimately, teachers require support throughout the professional education continuum from recruitment, through preparation, induction and continued professional development in order to create and sustain an excellent teaching force. There is a shared, vested interest by the preK-12 and higher education communities in providing the best education possible to all learners throughout the preK-16 and beyond continuum.

However, well-prepared and well-supported teachers alone will not improve student performance if other parts of the educational system that need to be addressed are not changed as well. Other essential components of the system include the availability of a challenging curriculum and instructional materials, the judicious use of technology to support instruction, and assessment systems that derive information on the depth of student learning that then informs classroom instruction (Branford, Brown and Cocking, 1999; Pellegrino, Chudowsky and Glaser, 2001). In addition, teaching and learning in the classroom must be supported by administrative leadership and by a community that advocates and takes responsibility for high expectations of excellence for every learner. Over the years, the National Science Foundation (NSF) has learned that student learning depends on successful interactions among leadership, resources/partnerships, policy/infrastructure, strategic decisions/interventions, sustainability, and outcomes/evaluation (Kim et al., 2000; Webb and Weiss, 2000). The President's reform agenda specifically focuses on the importance of partnerships as a linchpin, committing higher education as a dynamic collaborator with local and state systems, to strengthen preK-12 mathematics and science education.

Consistent with the NSF's vision and mission, and focusing on a major Foundation goal to invest in PEOPLE so that they can be competitive in a technological society, the Math and Science Partnership (MSP) described in this solicitation is intended to increase the capacity of preK-12 educational systems and institutions of higher education to provide the requisites for learning to high standards in mathematics and science, and particularly to reduce the achievement gaps among student populations. The MSP program calls on the partnerships to think creatively and put forth their best ideas and strategies. As stated in No Child Left Behind (2001), "...we have fallen short in meeting our goals for educational excellence. The academic achievement gap between rich and poor, Anglo and minority is not only wide, but in some cases is growing wider still." Serving all students so that outcomes can no longer be predicted based on race/ethnicity, socio-economic status, gender, or disability is the primary ambition of this new national effort to ensure that no child is left behind.

II. PROGRAM DESCRIPTION

The MSP seeks to improve student outcomes in high-quality mathematics and science by all students, at all preK-12 levels. As the achievement of students rises, the MSP expects to significantly reduce achievement gaps in mathematics and science education among diverse student populations. To achieve these long-term outcomes, the MSP program will support the development, implementation, and sustainability of exemplary partnerships addressing the following goals:

GOAL 1: To enhance significantly the capacity of schools to provide a challenging curriculum for every student, and to encourage more students to participate in and succeed in advanced mathematics and science courses.

GOAL 2: To increase and sustain the number, quality, and diversity of preK-12 teachers of mathematics and science, especially in underserved areas, through further development of a professional education continuum that considers traditional preservice education as well as alternative routes into the profession, professional development during early phases of a career (i.e., induction), and continued professional growth (inservice) in mathematics and science for preK-12 teachers.

GOAL 3: To contribute to the national capacity to engage in large-scale reform through participation in a network of researchers and practitioners, organized through the MSP program, that will study and evaluate educational reform and experimental approaches to the improvement of teacher preparation and professional development.

GOAL 4: To engage the learning community in the knowledge base being developed in current and future NSF Centers for Learning and Teaching and Science of Learning Centers.

A defining feature of the MSP program design is the development and implementation of partnerships among the major stakeholders, as described in *Educating Teachers of Science, Mathematics, and Technology: New Practices for the New Millennium* (National Research Council, 2001) and in *No Child Left Behind* (2001). Each partnership must include one or more school districts and one or more higher education entities, with other partners encouraged but not required. The insistence that higher education must play a critical role in preK-12 educational reform further distinguishes the MSP from prior NSF-supported systemic efforts. In particular, the MSP program emphasizes that mathematicians, scientists and engineers accept vital roles in this effort to impact the teacher workforce and to work with teachers and administrators to substantially improve student achievement. Therefore, teachers and higher education faculty, as well as administrators, should be significant contributors to the development of proposals responding to the MSP solicitation. Where appropriate, partnerships should significantly involve school guidance counselors who are key individuals guiding students into courses and, often, into careers. All participants in partnerships must collaborate to help develop a deeper national capacity to make certain that NO CHILD is LEFT BEHIND and contribute concretely and significantly "to ensuring that the United States has world-class scientists and engineers, a national workforce that is scientifically, technically and mathematically strong, and a citizenry that understands and can take full advantage of basic concepts of science, mathematics, engineering, and technology" (National Science Foundation, 2000).

In all cases, MSP collaborations will unite the efforts of local school districts with institutions of higher education to support preK-12 students and teachers. In an appropriate fashion fulfilling the needs of the local situation, partnerships must include mathematics, science, and/or engineering faculty and their undergraduate, graduate and postdoctoral students, and should link to the work of education faculty and preservice teachers if available on partner campuses. NSF will look for innovative approaches that effectively engage higher education institutions in addressing the goals noted above. For example, higher education faculty and students might work together and with school districts to embed educational technologies into preservice and inservice courses to ensure that teachers learn the effective use of technology as both instructional tools and as tools of the mathematics and science disciplines. In another model, mathematicians, scientists, and engineers, as well as undergraduate and graduate students from the higher education community, might involve secondary students or teachers in scientific research experiences or work directly with students and teachers in the preK-12 classroom. Additionally, a partnership might offer structured opportunities for disciplinary faculty to expand teachers' subject matter knowledge and inform them on applicable research in science and mathematics or to encourage their college majors in mathematics, science and engineering to consider careers in education. The MSP expects that partnering institutions of higher education will address policies and practices that impact those faculty members involved in preK-12 activities.

Partnerships that meaningfully engage additional stakeholders in the MSP enterprise for excellence in education are strongly encouraged. Effective partnerships likely will involve state or territorial or tribal government entities, but may also include community organizations, science centers and museums, business and industry, professional societies, research laboratories, dissemination and implementation centers, district-level educational support centers, social service agencies, private foundations, and other public and private organizations with interests in education such as educational research organizations, business roundtables or chambers of commerce.

The MSP lead organization (defined in Section III, Eligibility Information) acts on behalf of a partnership involving a manageable number of core partner institutions with SHARED GOALS, SHARED RESPONSIBILITIES and SHARED ACCOUNTABILITY for achieving the desired outcomes of the MSP. College or university partners must provide evidence of strong institutional commitment to support and involve faculty members among their science, mathematics, engineering, and education disciplines. MSP partners should establish collaborations with other NSF and national educational reform initiatives where feasible. Direct linkages to NSF's Centers for Learning and Teaching and future Science of Learning Centers and to the U.S. Department of Education's efforts in mathematics and science education are especially encouraged. Partnerships should review specific areas of interest that will be considered for co-funding by the Department and NSF (see Section IV, Award Information).

PROJECT CHARACTERISTICS

The MSP will provide support for two types of partnership efforts: those that are comprehensive in nature and those that are targeted in focus. The difference between the two approaches has to do with the scope, scale, and level of support involved rather than with the duration of the project or intensity of effort. In describing the proposed activities of a partnership, proposers must address the elements outlined under Project Description in Section V, Proposal Preparation and Preparation Instructions.

COMPREHENSIVE partnerships will be characterized by fundamental, inclusive and coordinated changes in educational practices, with strict accountability measures, at both the college/university level and the local district level. Comprehensive partnerships are successful when schools, school systems, higher education, and other partners are fully engaged and operating in concert to support students in achieving at an optimal level; when the teacher professional education continuum parallels expectations for students; when policies and practices are aligned with a clear set of goals and standards; and when the forthcoming improvements and innovations become intrinsic, sustainable parts of the ongoing educational system for all children and teachers. Additional stakeholders, especially state, territorial or tribal government entities, are encouraged to participate in comprehensive partnerships.

It is the intent of this program to allow maximum flexibility in design as partnerships address issues in preK-12 STEM education, as long as the goals and objectives of the MSP are achieved.

Differences in the structure and content of the proposal will be governed by differences in institutional and organizational capabilities of the individual partners and by specific, articulated needs. However, in all cases, the proposals must demonstrate how the proposed plan and activities will eventually lead to improvement in student achievement in science AND mathematics for all preK-12 students and to an ability to increase and sustain the number, quality and diversity of preK-12 teachers of mathematics and science. All elements of a system do not need to be addressed simultaneously in a comprehensive award. For example, a partnership might begin with "middle school mathematics" in the first years as this is where there are immediate needs, but plans should be provided to show how the scope of the project will expand in later years. Comprehensive projects may come to full scale in a time frame beyond the initial award period but this must be described in the proposal.

TARGETED efforts will focus on improving one or a limited set of element(s) of the mathematics and/or science educational endeavor. Partnerships that identify a targeted need are successful when specified outcomes are achieved and are incorporated into more far-reaching efforts, either locally, or by becoming a model to the national network of mathematics, science and engineering educators.

Targeted efforts should converge on a specific element/issue of the mathematics and/or science educational endeavor that requires concentrated attention in order to optimize educational improvement. A proposal submitted for a targeted award will EITHER offer innovative, "high-risk" solutions to a targeted element/issue that will substantially complete or advance excellence in STEM education, OR build capacity and/or solve newly-raised issues in STEM education within a current educational reform effort.

Targeted awards may, in some circumstances, have multiple components with more complexity if such an approach can be justified in meeting the specific needs identified by the partners. The intent is to allow for maximum flexibility in the project design and proposed scope of work in order to address the identified needs of a diverse educational community.

COMMON THEMES

It is expected that the partnerships submitting proposals for comprehensive or targeted awards will share a number of key characteristics that will facilitate reaching the above goals. In the MSP effort to improve teaching and learning in mathematics and science education, all comprehensive and targeted partnerships will:

- Establish results-oriented, accountable projects that implement evidence-based educational practices resulting in improved preK-12 student outcomes, significant reduction of the achievement gap, and generation of and sustaining of an exceptionally competent mathematics and science preK-12 teaching workforce;
- Ensure that its students are in mathematics and science classes that have high learning expectations and are taught by educators who effectively match local and state standards to appropriate curricula, learning technology, instruction and assessment;

- Strengthen the mathematics and science teaching profession, especially in underserved areas, through (a) recruitment of qualified individuals to become teachers, (b) preparation of future teachers in significant content and pedagogy, (c) support of the teacher certification process, (d) policies that impact where teachers are employed, (e) induction into the field, and (f) continuing professional development;
- Further cultural change within the collaborations such that all partners, including higher education faculty among education, engineering, mathematics and science departments, make commitments to working together with preK-12 educators and are accountable for student performance; and
- Contribute to the development of national capacity to introduce and sustain successful science and mathematics education reform. To this end, partnerships should implement effective systems that link assessment (classroom, local and state) and accountability measures with the MSP's expectations that awardees will participate in national, large-scale research as well as formative and summative evaluation of site-specific outcomes. Data collection activities should provide disaggregated data by race, ethnicity, socio-economic status, gender and disability, and include both student and teacher indicators in mathematics and science.

Partnerships must evolve based on local situations and local needs. Proposers should draw on the above themes, as appropriate, in responding to the MSP solicitation. As we work together with partnerships to serve all students well, NSF will seek to ensure that the MSP portfolio of projects contains a set of interconnected sites that are linked to other NSF initiatives and the national STEM education effort, rather than a set of isolated partnerships.

References

Before It's Too Late: A Report to the Nation. (2000) National Commission on Mathematics and Science Teaching for the 21st Century. <http://www.ed.gov/americaaccounts/glenn/report.pdf>

Branford, J.D., A.L. Brown and R.R. Cocking, eds. (1999) How People Learn: Brain, Mind, Experience, and School. National Academy Press, Washington, DC.

Kim, J., L. Crasco, R. Smith, G. Johnson, A. Karantonis and D. Leavitt (2001) Academic excellence for all urban students: Their accomplishments in science and mathematics. Systemic Research, Inc., Norwood, MA.

National Commission on Teaching and America's Future (1996) What Matters Most: Teaching for America's Future. <http://www.tc.edu/nctaf/publications/WhatMattersMost.pdf>

National Research Council (2001) Educating Teachers of Science, Mathematics, and Technology: New Practices for the New Millennium. Committee on Science and Mathematics Teacher Preparation. <http://www.nap.edu/books/0309070333/html/>

National Science Board (1999) Preparing Our Children: Math and Science Education in the National Interest. <http://www.nsf.gov/nsb/documents/1999/nsb9931/nsb9931.txt>

National Science Foundation (2000) NSF GPRA Strategic Plan: FY 2001 - 2006.

<http://www.nsf.gov/cgi-bin/getpub?nsf0104>

No Child Left Behind (2001) <http://www.ed.gov/inits/nclb/titlepage.html>

Pellegrino, J.W., N. Chudowsky and R. Glaser, eds. (2001) Knowing What Students Know: The Science and Design of Educational Assessment. National Academy Press, Washington, DC.

United States Commission on National Security/21st Century (2000) Seeking a National Strategy: A Concert for Preserving Security and Promoting Freedom.

<http://www.nssg.gov/PhaseII.pdf>

Webb, N. and I. Weiss (2000) Annual report of the study of the impact of Statewide System Initiatives. National Institute for Science Education, University of Wisconsin-Madison, Madison, WI.

III. ELIGIBILITY INFORMATION

Proposals must be submitted on behalf of a partnership by a LEAD ORGANIZATION that is one of the following:

- a preK-12 educational system (be it local, tribal, regional or state)
- an institution of higher education (including 2- and 4-year colleges and universities)
- a higher education system or consortium
- an educational consortium, private foundation, or other public or non-profit private school or organization focused on preK-12 education

Each PARTNERSHIP:

- MUST INCLUDE one or more higher education institutions AS WELL AS one or more local or regional school district partners, and
- ARE ENCOURAGED TO INCLUDE other partners that bring needed resources to the collaboration, including, but not limited to: a) a policymaking agency of a state, territory or tribal government; b) community organizations; c) science centers and museums; d) business and industry; e) public employers; f) professional societies; g) research laboratories; h) dissemination and implementation centers; i) district-level educational support centers; j) social service agencies; k) private foundations; or l) other public and private organizations with interests in education such as educational research organizations, business roundtables or chambers of commerce.

Limit on Number of Proposals: A partnership may submit only one proposal per review competition. Except in very unusual situations, a specific school district may participate in only one partnership proposal per competition. Other organizational entities may participate in more than one partnership if they are not the lead organization submitting a proposal to the same review competition. Proposers are strongly encouraged to confer with a Cognizant Program Officer before submission, if further clarifications are needed.

IV. AWARD INFORMATION

COMPREHENSIVE AWARDS: It is anticipated that large comprehensive MSP awards will be of 5-year duration for amounts up to \$7 million per year depending on the size and scope of the project as well as the availability of NSF funds. The size of the awards will be correlated, in part, to the scope and complexity of the proposal as well as the numbers of preK-12 students served. All comprehensive awards will be made as cooperative agreements with an initial commitment of five years and may be renewed for an additional five years, if sufficient funds are available.

Partnerships that receive MSP comprehensive awards will undergo annual reviews and a broad mid-point review with continuing funding dependent on satisfactory progress at various stages of the project. The level of annual support provided by NSF for the first year will be commensurate with the funding needed to initiate the work of the partnership and establish the foundation for sustainability. Annual funding levels for years 2-5 may vary depending upon the scope of the partnership's activities.

MSP comprehensive awards may be for up to \$7 million per year as determined by the scope of the activities and the student enrollment in the school district or consortia of districts that are in the partnership. **THE FOLLOWING ARE GENERAL GUIDELINES ONLY AND ARE NOT MEANT TO PRECLUDE OR PROHIBIT APPROPRIATE SUPPORT FOR INNOVATION. IF THE COMPLEXITY AND SCOPE OF THE WORK JUSTIFY A LARGER AWARD AMOUNT THAN PREDICTED BY STUDENT ENROLLMENT, THIS SHOULD BE WELL-DOCUMENTED IN THE PROPOSAL AND BUDGET JUSTIFICATION.** A general guideline for comprehensive award size is that there should be a 1:25 ratio between the number of preK-12 students impacted and the maximum size of the award. For example, the award maximum for a partnership involving a school district or consortia of districts partners enrolling 20,000 students would be \$500,000 per year or those enrolling 80,000 students would be \$2 million per year. While this formula provides a guide to the award size, the budget justification must still reflect actual proposed expenses and relate directly to the scope of the work. Whether or not these guidelines predict the award size, expected costs must be relative to the interventions that are being proposed.

PARTNERSHIPS INVOLVING FEWER THAN 10,000 STUDENTS ARE STRONGLY ENCOURAGED TO FORM LARGER CONSORTIA to impact more students and teachers, and for greater cost-effectiveness.

TARGETED AWARDS: Most of these efforts will be creative and innovative, smaller in scale, more narrowly focused, and limited in scope. Targeted awards may address particular problem areas where improvements in science and mathematics instruction and achievement are already underway, where time and resources are needed to develop meaningful partnerships, or where the intent is to try innovative, "high-risk" solutions to specific questions.

Targeted awards will be made for up to a 5-year duration for amounts ranging from \$100,000 to \$1.5 million per year. The amount of funds requested and duration of a targeted award will depend on a well-detailed rationale for reaching specified outcomes. Targeted awards will be made either as standard or continuing grants, and will be subject to annual review.

As a subset of the targeted awards, the U.S. Department of Education and NSF will consider co-funding partnerships that address the following strategies:

- a) engaging classroom teachers in mathematical or scientific research and development projects sponsored by institutions of higher education and/or other private and public sector research organizations;
- b) engaging practicing teachers as professional colleagues who work together with scientists, mathematicians and engineers to master advanced new content and teaching strategies;
- c) demonstrating how technology can be used in the classroom to deepen the scientific and mathematical understanding of teachers and to promote higher student achievement; or
- d) establishing and evaluating the effectiveness of differential salary scales used to make the mathematics and science teaching profession more comparable in pay to the private sector, both as a tool to attract beginning teachers with deep mathematical or scientific training and as a means to create a career ladder capable of retaining highly skilled and effective teachers.

V. PROPOSAL PREPARATION AND SUBMISSION INSTRUCTIONS

A. Proposal Preparation Instructions

Letters of Intent: For MSP program planning, an optional Letter of Intent is requested. The letter should indicate the lead organization in the proposed partnership as well as other anticipated partners, especially identifying the local school district(s) and institution(s) of higher education that will be involved and the total population of students to be served. The Letter of Intent should indicate whether the partnership expects to submit a proposal for a comprehensive or a targeted award and should be sent via e-mail to the MSP Program at msp@nsf.gov. (This e-mail address should only be used for sending a Letter of Intent.)

Full Proposal:

Proposals submitted in response to this program announcement/solicitation should be prepared and submitted in accordance with the general guidelines contained in the NSF *Grant Proposal Guide* (GPG). The complete text of the GPG is available electronically on the NSF Web Site at: <http://www.nsf.gov/cgi-bin/getpub?gpg>. Paper copies of the GPG may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from pubs@nsf.gov.

Proposers are reminded to identify the program solicitation number (NSF 02-061) in the program announcement/solicitation block on the Cover Sheet for Proposal to the National Science Foundation. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

ALL PROPOSALS MUST CONTAIN THE FOLLOWING SECTIONS AS DESCRIBED FULLY IN THE GPG:

- All organizations must register with NSF as a FastLane organization by selecting "Registration Information" from the FastLane homepage (<https://www.fastlane.nsf.gov>).
- After selecting the MSP program solicitation number (NSF 02-061) on the Cover Sheet, you must specify the "NSF Unit Consideration" as either Comprehensive Award OR Targeted Award.

- Table of Contents. The Table of Contents will be created automatically in FastLane.
- Project Summary. The one-page summary should not exceed 200 words and should be placed on a separate page. The heading should include the name of the proposed endeavor, the submitting (i.e., lead) organization, the name(s) of the local school district partner(s), the name(s) of the partner institution(s) of higher education, the name of the congressional district(s) impacted, and the name, address, and telephone number of the principal investigator.
- Project Description. The Project Description must not exceed 20 SINGLE-SPACED PAGES FOR PROPOSED COMPREHENSIVE AWARDS or 15 SINGLE-SPACED PAGES FOR PROPOSED TARGETED AWARDS, and height of the letters must not be smaller than 10 point (See GPG, Chapter II, Proposal Margin and Spacing Requirements). Proposals exceeding the page limitation or double-spaced will not be considered. **IMPORTANT: SEE SUPPLEMENTAL INSTRUCTIONS BELOW FOR INFORMATION ABOUT REQUIRED ELEMENTS IN THE PROJECT DESCRIPTION.**
- A Biographical Sketch for each senior personnel involved as principal investigators, co-principal investigators, or project director(s), or having a major administrative, instructional, or consulting responsibility to the endeavor. Individual biographical sketches must not exceed two pages and may include a list of up to five publications most closely related to the proposed
- Statement of Current and Pending Support.
- Appendices (Supplementary Documentation). Materials included in the Appendices must be held to a minimum and **MUST NOT BE USED TO CIRCUMVENT THE PAGE LIMITATIONS FOR THE PROJECT DESCRIPTION.** The Appendices should be clearly labeled and placed at the end of the proposal. In FastLane, the Appendices can be uploaded as a separate PDF file. They should include:
 - (1) A brief (no more than two pages) bibliography of literature pertinent to the Project Description;
 - (2) a list of collaborators on this proposal and their roles and specific support for the proposal;
 - (3) a timeline for partnership activities;
 - (4) disaggregated student participation and achievement data, from the partner school district(s), to determine how subgroups of students are currently doing and to serve as a baseline for pinpointing both successes and failures. While such data will not provide full explanations in and of themselves, they will afford critical starting points for identifying opportunities for moving forward. Hence, baseline data must be provided on the most recent student achievement in mathematics and science in comparison to state and/or national averages. The data should identify the type of test (norm- or criterion-referenced) and indicate each of the grade levels in which system-wide science and/or mathematics assessments were administered. They should include achievement scores disaggregated by race/ethnicity, socio-economic status, gender, and disability, the percentage of students tested against grade-level enrollment, and the appropriate categories for reporting test results (quartiles, mean percentiles, proficiency levels, or above or below cut scores). Baseline data may also include course enrollment and completion rates, as well as college matriculation rates. The narrative of the proposal should make specific references to the baseline data. Legends, footnotes, and other identifying characteristics must be included to provide full explanations of student achievement data;

(5) baseline data regarding the availability, in the partner school district(s), of teachers of mathematics and science. The data should relate to quantity, diversity and quality (e.g., baccalaureate/masters degrees, teaching out of the certification field, professional development hours), of teachers in the system(s);

(6) teacher preparation and/or professional development data, from the partner institution(s) of higher education, to indicate capacity to serve the teacher professional continuum needs of the school district partner(s). In those proposals where it is applicable, the higher education partner(s) should document the number of mathematics and science teachers that they produce annually (through traditional preservice and/or alternative routes), where new teachers typically are placed for their initial teaching appointments, the current level of involvement of Arts and Science faculty in preK-12 reform, and current policies and practices that encourage their mathematics, science and engineering faculties to engage in work beyond their research and teaching efforts;

(7) annual benchmarks against baseline data for outcomes related to the goals of the MSP; and

(8) letters of substantive commitment.

SUPPLEMENTAL INSTRUCTIONS FOR THE PROJECT DESCRIPTION

The Project Description of the MSP proposals must demonstrate explicitly the partners' commitments to preK-12 reform and contain the following elements:

1. OVERVIEW

This section should describe the need for the MSP in the specific locale(s), and what the partnership plans to accomplish. This section should refer to the data in the Appendices (Supplementary Documentation). Subsections should refer to:

- The preK-12 environment: A description of the specific needs of the preK-12 systems that are involved, explicating the attributes and challenges regarding academic excellence in mathematics and science learning and teaching. The partnership should evaluate the current status of the preK-12 science and mathematics curriculum, its teacher workforce, professional development needs, assessment and accountability systems, and policies.
- The higher education environment: A description of the higher education partners as regards their readiness and capacity to commit to issues of preK-12 educational reform. The higher education partners should describe their history in educating mathematics and science teachers and specify prior involvement of Arts and Science faculty in preK-12 education.

2. PLANNING HISTORY

This section should describe the process and results of planning by which teachers, school career or guidance counselors, and administrators in district(s), faculty and administrators in institution(s) of higher education, and other partners developed a shared vision for establishing the reform agenda. This planning phase description should identify key participants, committees, and other working groups established; highlight milestones, obstacles, kinds and scope of data to be used to inform decisions; and describe other emerging mechanisms to help achieve the program goals. This portion of the proposal should succinctly explain the rationale for the partnership's selection of the lead organization. This section should provide information on the ability of the higher education partner(s) to support the collaboration. Further, examples of successful past collaborations among the partners should be presented as appropriate to the proposed endeavor. This section also should provide information on exemplary local, state, regional, and national programs that might be useful to the efforts being proposed and characteristics of systems that have made significant progress towards educational reform.

3. RESULTS FROM PRIOR NSF FUNDING

If the proposers received prior funding from NSF in the last five years, information on the prior award is required IF RELEVANT TO THE PROPOSED SCOPE OF WORK (see Grant Proposal Guide NSF 02-2).

4. GOALS, OBJECTIVES AND BENCHMARKS

This section should describe, in narrative form, expected benchmarks of progress related to programmatic goals and strategic actions that will lead to short-term and long-term outcomes, highlighting those that are related to overall student performance, gaps in achievement among student subpopulations (e.g., race/ethnicity, gender, socio-economic status, and disability), and teacher workforce capacity (e.g., availability, production, and placement). This section can refer to more detailed expectations that are in a tabular form within the Appendices.

5. PROGRAM DESIGN

Careful consideration must be given to and evidence provided to demonstrate how support through this proposal would facilitate the achievement of the goals of the MSP. It is critically important that proposers explain HOW they will achieve their specific goals, rather than just presenting WHAT they intend to accomplish. This section should describe the work that will be undertaken, the relationship of this work to past activities and to longer-term goals of the partners, and the relation of the proposed work to the present state of knowledge in the field (with references in the bibliography). It is expected that the Program Design will include the following subsections:

- Vision: A vision for the partnership that creatively responds to local and state needs while addressing the MSP aim to ensure high-quality mathematics and science education for all students.
- Impact: The number of preK-12 students and/or teachers who will be reached by the partnership activities, disaggregated by race/ethnicity, socio-economic status, gender, and disability.
- Partnership capacity: A description of the capacity and readiness for deep engagement by the MSP partners, their anticipated roles and their commitments to specified institutional change outcomes.
- Plan: A compelling implementation plan, based on research, for helping the MSP achieve the core goals of the MSP, including alignment of standards, curricular, instructional and assessment endeavors. This plan would include intentions regarding the identification, selection and/or implementation of preK-12 mathematics and science curricula, and the inclusion of these curricula in all of the partners' efforts.
- Additional resources: Leveraging of human, institutional, and fiscal resources in support of quality teaching and learning.
- Linkages: As much as possible, partnerships should demonstrate connections with other NSF preK-12 educational initiatives, particularly the Centers for Learning and Teaching; the future Science of Learning Centers; Science, Technology, Engineering, and Mathematics Teacher Preparation; Instructional Materials Implementation Sites; Instructional and Assessment Materials Development; and Research on Learning and Education. Similarly, the U.S. Department of Education, including the Interagency Education Research Initiative (a joint effort among several federal agencies), sponsors numerous programs that support the President's and Congress' goals and linkages to such sources to leverage federal funds for the greatest effectiveness along with private funds are encouraged.

6. PROJECT MANAGEMENT, STAFFING AND OPERATION (MANAGEMENT PLAN)

The proposal must indicate who the Lead Organization is and present a compelling rationale for this selection in the context of the proposed work. It is understood that staffing requirements will depend on the design, scope, and discipline focus of the proposed program; however, staffing should include district administrators, school personnel (e.g., teachers, curriculum coordinators, career/guidance counselors, principals), and mathematicians, scientists, engineers, and education faculty from partnering higher education institution(s). The proposal should also include plans with commitments of the primary partners to continue the proposed activities after NSF funding has ended and certification that the NSF funds will not replace extant financial resources devoted to mathematics and science education. The description of the management and operation of the proposed partnership should provide confidence that the goals of the partnership will be realized as well as specific identification of institutional change that will result within each of the primary partners as a result of this partnership. Further, the management and operation should indicate a commitment to participation in a MSP network of researchers and practitioners that will study and evaluate educational reform and experimental approaches to the improvement of teacher preparation and professional development resulting in enhanced learning in mathematics and science by all preK-12 students.

7. ASSESSMENT/ACCOUNTABILITY

Each partnership must carefully plan project evaluation to guide the annual assessment of progress and to measure the impact of the effort. This section should include the means by which the partners document, measure, and report on the resources, allocations, programs, policies, procedures, and measurable outcomes as they bear on accountability for science and mathematics improvement related to the MSP program goals. In the formative sense, evaluation should provide evidence of the strengths and weaknesses of the effort being implemented, facilitating the partnership's understanding of what works. The evaluation should also be designed to respond to the summative need of analyzing both qualitative and quantitative data to determine the effectiveness of the partnership in contributing to positive institutional changes and student academic outcomes.

In addition to each project's own evaluation activities, all MSP projects will participate in collective activities designed to enhance the national understanding of how to introduce and sustain successful reform of science and mathematics education on a large scale. Financial support for this work will come from additional resources so proposals do not have indicate a budget for these activities. Partnerships will be offered the opportunity to work with one or more Centers for Learning and Teaching or, when they are established, one or more Science of Learning Centers, participating in research directed at understanding the challenges associated with (a) the creation and development of effective partnerships and collaborations; (b) adaptation of effective models and practices in local contexts; (c) expansion of pilot or preliminary work to a larger scale; and (d) the creation of the capacity for sustained efforts to achieve excellence in science and mathematics for all students. As part of the national analysis of the MSP program, the partnership must indicate an ability and a willingness to participate in relevant large-scale evaluation and research activities as requested by NSF.

Proposers are reminded to identify the program solicitation number (NSF-02-061) in the program announcement/solicitation block on the proposal Cover Sheet. Compliance with this requirement is critical to determining the relevant proposal processing guidelines. Failure to submit this information may delay processing.

B. Budgetary Information

Cost sharing is not required in proposals submitted under this Program Solicitation.

Other Budgetary Limitations: Budget Form 1030. This must be provided, in summary fashion, for the entire partnership including annual budgets and a cumulative budget for all years of the initiative. In FastLane, the type of budget (i.e. Year 1, Year 2, etc., and the cumulative budget) is printed at the top of the budget form. EACH SUB-AWARD MUST ALSO PROVIDE COMPLETE BUDGET FORMS DETAILING ANNUAL BUDGETS AND A CUMULATIVE BUDGET.

Budget Justification Pages should briefly detail clarifying information for the funds requested on each line of Budget Form 1030. EXPLANATION SHOULD ALSO BE PROVIDED FOR THE FUNDS REQUESTED FOR EACH SUB-AWARD PROPOSED AS A PART OF THE OVERALL BUDGET.

Other Budgetary Limitations:

- Sub-Award Limitations for Comprehensive Awards: None
- Equipment and Facilities: Ordinarily, funds may not be used for major equipment purchases. Any such proposed purchases should be well-justified. No funds may be used for facilities.

C. Deadline/Target Dates

Proposals must be submitted by the following date(s):

Letters of Intent (*optional*): March 15, 2002

Full Proposals by 5:00 PM local time:

April 30, 2002 5:00 PM your local time, and October 15th annually thereafter

D. FastLane Requirements

Proposers are required to prepare and submit all proposals for this Program Solicitation through the FastLane system. Detailed instructions for proposal preparation and submission via FastLane are available at: <http://www.fastlane.nsf.gov/a1/newstan.htm>. For FastLane user support, call 1-800-673-6188 or e-mail fastlane@nsf.gov.

Submission of Electronically Signed Cover Sheets. The Authorized Organizational Representative (AOR) must electronically sign the proposal Cover Sheet to submit the required proposal certifications (see [Chapter II, Section C](#) of the Grant Proposal Guide for a listing of the certifications). The AOR must provide the required certifications within five working days following the electronic submission of the proposal. Further instructions regarding this process are available on the FastLane website at: <http://www.fastlane.nsf.gov>.

VI. PROPOSAL REVIEW INFORMATION

A. NSF Proposal Review Process

Reviews of proposals submitted to NSF are solicited from peers with expertise in the substantive area of the proposed research or education project. These reviewers are selected by Program Officers charged with the oversight of the review process. NSF invites the proposer to suggest, at the time of submission, the names of appropriate or inappropriate reviewers. Care is taken to ensure that reviewers have no conflicts with the proposer. Special efforts are made to recruit reviewers from non-academic institutions, minority-serving institutions, or adjacent disciplines to that principally addressed in the proposal.

The two merit review criteria are listed below. The criteria include considerations that help define them. These considerations are suggestions and not all will apply to any given proposal. While proposers must address both merit review criteria, reviewers will be asked to address only those considerations that are relevant to the proposal being considered and for which he/she is qualified to make judgements.

What is the intellectual merit of the proposed activity?

How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of the prior work.) To what extent does the proposed activity suggest and explore creative and original concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

What are the broader impacts of the proposed activity?

How well does the activity advance discovery and understanding while promoting teaching, training, and learning? How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be disseminated broadly to enhance scientific and technological understanding? What may be the benefits of the proposed activity to society?

NSF staff will give careful consideration to the following in making funding decisions:

Integration of Research and Education

One of the principal strategies in support of NSF's goals is to foster integration of research and education through the programs, projects, and activities it supports at academic and research institutions. These institutions provide abundant opportunities where individuals may concurrently assume responsibilities as researchers, educators, and students and where all can engage in joint efforts that infuse education with the excitement of discovery and enrich research through the diversity of learning perspectives.

Integrating Diversity into NSF Programs, Projects, and Activities

Broadening opportunities and enabling the participation of all citizens -- women and men, underrepresented minorities, and persons with disabilities -- is essential to the health and vitality of science and engineering. NSF is committed to this principle of diversity and deems it central to the programs, projects, and activities it considers and supports.

Additional Review Criteria

In elaboration of the general NSF review criteria, reviewers also will be asked to review MSP proposals based on the proposers' responses to the elements requested for the Project Description in the above Section V, Proposal Preparation and Preparation Instructions.

Proposals for comprehensive awards must demonstrate the scope and system-wide nature of the partnership activities while those for targeted awards are expected to be narrowly focused yet linked to systemic education reform. Reviewers will consider the following types of questions and apply them to reviews of proposals for comprehensive or targeted awards, as appropriate.

NEED/IMPACT

- Does the proposal provide evidence of a sufficient documented need for the program?
- What will be the overall impact of the partnerships with respect to the numbers of both students and teachers who will be involved?
- If a partnership seeking a comprehensive award impacts less than 10,000 students, have partners considered linking with additional districts to reach more students and teachers, and for greater cost-effectiveness?

STUDENT ACHIEVEMENT

- Has a description of the existing preK-12 science and mathematics student achievement baseline, including disaggregated data related to student outcomes among the various student subpopulations, been included?
- Is there evidence that the effort is likely to engage all students in attaining higher levels of student achievement in mathematics and science?
- Has the partnership explored the roles of career/guidance counselors in guiding students into courses and careers?
- Are the proposed strategies for improving student achievement in mathematics and science likely to produce the desired outcomes?

TEACHER QUANTITY, DIVERSITY AND QUALITY

- Is there evidence that the partnership will increase the number, diversity and quality of preK-12 teachers of mathematics and science?
- Have partners considered how they might influence policies encouraging teachers to teach in underserved areas?
- Are there specific plans in the proposal which describe the establishment of a planned, collaborative educational process of continuous improvement for teachers?

PARTNERSHIPS

- What is the compelling evidence that the proposal will be able to establish a results-oriented, accountable partnership to implement evidence-based educational practices resulting in the successful achievement of specified goals?

- What information does the proposal's planning history provide to suggest that the identified partners have the capacity to engage productively in working together to attain shared goals?
- What are the definitive commitments by higher education institutions to engage science, mathematics and engineering faculty in addressing policies and practices related to their role in the teacher education continuum? From what institutional level are these commitments made?
- Is the rationale for the partnership membership and the selection of the lead organization compelling in terms of meeting the intent of the MSP? Have they developed a workable management plan with appropriate timelines? Does the partnership have the capability to carry out the endeavor? Are proposed sub-awards necessary and have the proposers developed a plan for administering them?
- What is the depth of the engagement of the MSP partners? What prior history exists among the proposed partners and what were the results pertinent to this endeavor?
- What is the evidence that these partners have mechanisms that will allow them to engage successfully in working together to attain shared goals, responsibility and accountability?
- What will be different about the engagement of these partners from previous efforts and how will that substantively advance the institutionalization and scale of the effectiveness of addressing PREK-12 teaching and learning?

SUSTAINABILITY

- What is the potential of the proposed partnership to foster and sustain the reform efforts in the long term?
- Is there an effective plan for bringing the endeavor to full scale and for sustaining the effort while maintaining high quality once NSF support has ceased?
- Even at the earliest stages, do the partners provide evidence that their involvement in the project will likely lead to changes in their institutions?

DATA

- Will data collection activities provide disaggregated data by race/ethnicity, gender, socioeconomic status, and disability, as well as valid indices of student performance in mathematics and science?
- Are annual benchmarks of progress related to programmatic goals (for both preK-12 students and teachers) and strategic actions indicating both short-term and long-term outcomes for all partners established against a baseline?
- Are the benchmarks reasonable and appropriate in demonstrating an anticipated rate of improvement that exceeds that of locals in which no MSP investment exists?
- Is there evidence of effective mathematics and science assessment systems to be utilized in order to gather, interpret, and use reliable student achievement data that can be used to inform the MSP planning and decision-making process?
- To what extent does the accountability system encompass the appropriate use of data, including the tracking of students' outcomes (e.g., performance, attitudes, and enrollment in high school STEM advanced courses)?

EVALUATION

- For comprehensive awards, is there a clearly defined system-level approach to the proposed evaluation plan for the project?

- How will the quality of each element of the MSP be determined?
- Does the proposal identify criteria for an effective partnership and benchmarking of progress?
- Are criteria for success related to each partner's outcomes and MSP goals specified?
- Is the expertise available to fully implement the evaluation design?

PROPOSED PLAN

- Is there evidence of a collaborative, comprehensive planning process engaging all MSP partners and community stakeholders in understanding the need, defining specific strategies and actions to address the need, and establishing quantitative and qualitative outcomes?
- Is there evidence in the proposal that efforts will further cultural change within partnership such that all partners make commitments to working together with preK-12 educators and are accountable for student performance?
- Is there a rational management plan for the MSP in the proposal?
- Does the proposal include definitive commitments of the preK-12 participating district(s) and institution(s) of higher education related to policy, fiscal, and instructional practice?

BUDGET

- Are budgets related to the activities to be carried out and to the overall numbers of both students and teachers that will be impacted?
- Are the costs appropriate to achieve the outcomes?
- Does the budget narrative present detailed justifications for the involvement of each partner?
- Does the proposal indicate how resources will be coordinated and developed to achieve the MSP goals?

PERSONNEL

- Is the proposed staff, especially the project director(s) and other key personnel, qualified to lead this endeavor?
- Does the partnership fully include local school district and institution of higher education representatives, particularly science, mathematics, and engineering faculty but also education faculty if available on the partner campus(es)?
- Are staff and time allocations sufficient to do the job?

A summary rating and accompanying narrative will be completed and submitted by each reviewer. In all cases, reviews are treated as confidential documents. Verbatim copies of reviews, excluding the identities of reviewers, are sent to the Principal Investigator/Project Director by the Program Director. In addition, the proposer will receive an explanation of the decision to award or decline funding.

B. Review Protocol and Associated Customer Service Standard

All proposals are carefully reviewed by at least three other persons outside NSF who are experts in the particular field represented by the proposal. Proposals submitted in response to this announcement/solicitation will be reviewed by panel reviews, and reverse site visits, if necessary.

Reviewers will be asked to formulate a recommendation to either support or decline each proposal. The Program Officer assigned to manage the proposal's review will consider the advice of reviewers and will formulate a recommendation.

NSF is striving to be able to tell applicants whether their proposals have been declined or recommended for funding within six months. The time interval begins on the closing date of an announcement/solicitation or the date of proposal receipt (whichever is later). The interval ends when the Division Director accepts the Program Officer's recommendation.

In all cases, after programmatic approval has been obtained, the proposals recommended for funding will be forwarded to the Division of Grants and Agreements for review of business, financial, and policy implications and the processing and issuance of a grant or other agreement. Proposers are cautioned that only a Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF should be inferred from technical or budgetary discussions with a NSF Program Officer. A Principal Investigator or organization that makes financial or personnel commitments in the absence of a grant or cooperative agreement signed by the NSF Grants and Agreements Officer does so at one's own risk.

VII. AWARD ADMINISTRATION INFORMATION

A. Notification of the Award

Notification of the award is made to *the submitting organization* by a Grants Officer in the Division of Grants and Agreements. Organizations whose proposals are declined will be advised as promptly as possible by the cognizant NSF Program Division administering the program. Verbatim copies of reviews, not including the identity of the reviewer, will be provided automatically to the Principal Investigator. (See section VI.A. for additional information on the review process.)

B. Award Conditions

An NSF award consists of: (1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto; (2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures); (3) the proposal referenced in the award letter; (4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1)* or Federal Demonstration Partnership (FDP) Terms and Conditions;* and (5) any announcement or other NSF issuance that may be incorporated by reference in the award letter. Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Conditions (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

*These documents may be accessed electronically on NSF's Web site at http://www.nsf.gov/home/grants/grants_gac.htm. Paper copies may be obtained from the NSF Publications Clearinghouse, telephone (301) 947-2722 or by e-mail from pubs@nsf.gov.

More comprehensive information on NSF Award Conditions is contained in the NSF *Grant Policy Manual* (GPM) Chapter II, available electronically on the NSF Web site at <http://www.nsf.gov/cgi-bin/getpub?gpm>. The GPM is also for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, DC 20402. The telephone number at GPO for subscription information is (202) 512-1800. The GPM may be ordered through the GPO Web site at <http://www.gpo.gov>.

C. Reporting Requirements

For all multi-year grants (including both standard and continuing grants), the PI must submit an annual project report to the cognizant Program Officer at least 90 days before the end of the current budget period.

Within 90 days after the expiration of an award, the PI also is required to submit a final project report. Approximately 30 days before expiration, NSF will send a notice to remind the PI of the requirement to file the final project report. Failure to provide final technical reports delays NSF review and processing of pending proposals for that PI. PIs should examine the formats of the required reports in advance to assure availability of required data.

NSF has implemented an electronic project reporting system, available through FastLane. This system permits electronic submission and updating of project reports, including information on project participants (individual and organizational), activities and findings, publications, and other specific products and contributions. PIs will not be required to re-enter information previously provided, either with a proposal or in earlier updates using the electronic system.

VIII. CONTACTS FOR ADDITIONAL INFORMATION

General inquiries regarding Math and Science Partnership should be made to:

- Dr. Bernice T. Anderson, EHR, Research, Evaluation and Communication, telephone: 703-292-5151, e-mail: banderso@nsf.gov.
- Ms. Kathleen Bergin, EHR, Educational System Reform, telephone: 703-292-5171, e-mail: kbergin@nsf.gov.
- Dr. Jody Chase, EHR, Educational System Reform, telephone: 703-292-5173, e-mail: lchase@nsf.gov.
- Dr. Kathryn B. Chval, EHR, Elementary, Secondary and Informal Education, telephone: 703-292-5088, e-mail: kchval@nsf.gov.
- Mr. Lloyd E. Douglas, MPS, Mathematical Sciences, telephone: 703-292-4862, e-mail: ldouglas@nsf.gov.
- Dr. Janice Earle, EHR, Elementary, Secondary and Informal Education, telephone: 703-292-5097, e-mail: jearle@nsf.gov.
- Dr. Joyce B. Evans, EHR, Elementary, Secondary and Informal Education, telephone: 703-292-5098, e-mail: jevans@nsf.gov.
- Mr. Julio E. Lopez-Ferrao, EHR, Educational System Reform, telephone: 703-292-5183, e-mail: jlopezfe@nsf.gov.
- Ms. Celestine H. Pea, EHR, Educational System Reform, telephone: 703-292-5186, e-mail: cpea@nsf.gov.
- Ms. Mary F. Poats, ENG, Engineering Education and Centers, telephone: 703-292-5357, e-mail: mpoats@nsf.gov.
- Dr. Joan T. Prival, EHR, Undergraduate Education, telephone: 703-292-4635, e-mail: jprival@nsf.gov.
- Dr. Marilyn J. Suiter, EHR, Human Resource Development, telephone: 703-292-5121, e-mail: msuiter@nsf.gov.

For questions related to the use of FastLane, contact:

- Ms. Rosalind D. Douglas, Education and Human Resources, Educational System Reform, telephone: 703-292-7880, e-mail: rdouglas@nsf.gov.
- Ms. Grisela P. Moranda, Education and Human Resources, Educational System Reform, telephone: 703-292-5330, e-mail: gmoranda@nsf.gov.

IX. OTHER PROGRAMS OF INTEREST

The NSF *Guide to Programs* is a compilation of funding for research and education in science, mathematics, and engineering. The NSF *Guide to Programs* is available electronically at <http://www.nsf.gov/cgi-bin/getpub?gp>. General descriptions of NSF programs, research areas, and eligibility information for proposal submission are provided in each chapter.

Many NSF programs offer announcements or solicitations concerning specific proposal requirements. To obtain additional information about these requirements, contact the appropriate NSF program offices. Any changes in NSF's fiscal year programs occurring after press time for the *Guide to Programs* will be announced in the NSF [E-Bulletin](#), which is updated daily on the NSF web site at <http://www.nsf.gov/home/ebulletin>, and in individual program announcements/solicitations. Subscribers can also sign up for NSF's [Custom News Service](#) (<http://www.nsf.gov/home/cns/start.htm>) to be notified of new funding opportunities that become available.

Other NSF Programs that would be synergistic with the MSP include:

Centers for Learning and Teaching (CLT)

Science of Learning Centers (SLC, when established)

Teacher Enhancement (ESIE - TE) including Teacher Retention and Renewal (TRR) and Local Systemic Change (LSC)

Instructional and Assessment Materials Development (ESIE - IMD) including Instructional Materials Implementation Sites

Science, Technology, Engineering, and Mathematics Teacher Preparation (DUE - STEMTP)

Graduate Teaching Fellows in K-12 Education (DGE - GK-12)

Research on Learning and Education (REC - ROLE)

Interagency Education Research Initiative (NSF/REC, DoED, NIH - IERI)

Interested parties should also consider the numerous opportunities within the U.S. Department of Education for support of activities in mathematics and science education.

ABOUT THE NATIONAL SCIENCE FOUNDATION

The National Science Foundation (NSF) funds research and education in most fields of science and engineering. Awardees are wholly responsible for conducting their project activities and preparing the results for publication. Thus, the Foundation does not assume responsibility for such findings or their interpretation.

NSF welcomes proposals from all qualified scientists, engineers and educators. The Foundation strongly encourages women, minorities and persons with disabilities to compete fully in its programs. In accordance with Federal statutes, regulations and NSF policies, no person on grounds of race, color, age, sex, national origin or disability shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from NSF (unless otherwise specified in the eligibility requirements for a particular program).

Facilitation Awards for Scientists and Engineers with Disabilities (FASSED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF-supported projects. See the program announcement/solicitation for further information.

The National Science Foundation has Telephonic Device for the Deaf (TDD) and Federal Information Relay Service (FIRS) capabilities that enable individuals with hearing impairments to communicate with the Foundation about NSF programs, employment or general information. TDD may be accessed at (703) 292-5090, FIRS at 1-800-877-8339.

The National Science Foundation is committed to making all of the information we publish easy to understand. If you have a suggestion about how to improve the clarity of this document or other NSF-published materials, please contact us at plainlanguage@nsf.gov.

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested on proposal forms and project reports is solicited under the authority of the National Science Foundation Act of 1950, as amended. The information on proposal forms will be used in connection with the selection of qualified proposals; project reports submitted by awardees will be used for program evaluation and reporting within the Executive Branch and to Congress. The information requested may be disclosed to qualified reviewers and staff assistants as part of the proposal review process; to applicant institutions/grantees to provide or obtain data regarding the proposal review process, award decisions, or the administration of awards; to government contractors, experts, volunteers and researchers and educators as necessary to complete assigned work; to other government agencies needing information as part of the review process or in order to coordinate programs; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. Information about Principal Investigators may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records," 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records," 63 Federal Register 268 (January 5, 1998). Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of receiving an award.

Pursuant to 5 CFR 1320.5(b), an agency may not conduct or sponsor, and a person is not required to respond to an information collection unless it displays a valid OMB control number. The OMB control number for this collection is 3145-0058. Public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions for reducing this burden, to: Suzanne Plimpton, Reports Clearance Officer, Division of Administrative Services, National Science Foundation, Arlington, VA 22230, or to Office of Information and Regulatory Affairs of OMB, Attention: Desk Officer for National Science Foundation (3145-0058), 725 17th Street, N.W. Room 10235, Washington, D.C. 20503.

OMB control number: 3145-0058.